

LP2 in order to match the LP2 polarization state of broad-band linearly polarizing reflective panel 11'. Such polarization matching ensures that spectral energy which is not reflected from the broad-band polarizing reflective panel 11', but is transmitted (i.e. leaked) therethrough due to a suboptimal extinction ratio, is absorbed by the broad-band absorptive linear polarizer 11A' through energy dissipation. Preferably, these absorptive polarizing filter panels 8A' and 11A' are laminated directly onto broad-band linearly polarizing reflective panels 8 and 11, respectively. The use of broad-band absorptive linear polarizers 8A' and 8A" substantially improves the contrast of images formed by the LCD panel, without reducing the light transmission efficiency along the light projection axis of the LCD panel. Such broad-band absorptive polarizers can be realized using dichroic polarizing material well known in the art.

[0403] As shown in FIG. 35, the LCD panel of FIGS. 3A1 and 3A2 can be modified by mounting a first broad-band absorptive circular polarizer 8A" to the front surface of broad-band circularly polarizing reflective panel 8", and mounting a second broad-band absorptive circular polarizer panel 11A" to the front surface of broad-band circularly polarizing reflective panel 11". The polarization state of broad-band absorptive circular polarizer panel 8A" is LHCP in order to match the LHCP polarization state of broad-band circularly polarizing reflective panel 8". Such polarization matching ensures that spectral energy which is not reflected from the broad-band circularly polarizing reflective panel 8", but is transmitted (i.e. leaked) therethrough due to a suboptimal extinction ratio, is absorbed by the broad-band absorptive circular polarizer 8A" through energy dissipation. Similarly, the polarization state of broad-band absorptive circular polarizer panel 11A" is RHCP in order to match the RHCP polarization state of broad-band circularly polarizing reflective panel 11". Such polarization matching ensures that spectral energy which is not reflected from the broad-band polarizing reflective panel 11", but is transmitted (i.e. leaked) therethrough due to a suboptimal extinction ratio, is absorbed by the broad-band absorptive circular polarizer panel 11A" through energy dissipation. The use of broad-band absorptive circular polarizers 8A" and 11A" substantially improves the contrast of images formed by the LCD panel, without reducing the light transmission efficiency along the light projection axis of the LCD panel. Such broad-band absorptive polarizers can be realized using dichroic polarizing material well known in the art. Preferably, these absorptive circularly polarizing filter panels 8A" and 11A" are laminated directly onto broad-band circularly polarizing reflective panels 8" and 11", respectively, during the fabrication process of the LCD panel.

[0404] As shown in FIG. 36, the LCD panel of FIGS. 30A1 and 30A2 can be modified by mounting a first broad-band absorptive linear polarizer 8A' to the front surface of broad-band polarizing reflective panel 8', and mounting a second broad-band absorptive linear polarizer 11A' to the front surface of broad-band polarizing reflective panel 11'. The polarization state of broad-band absorptive linear polarizer panel 8' is LP1 in order to match the LP1 polarization state of broad-band linearly polarizing reflective panel 8'. Such polarization matching ensures that spectral energy which is not reflected from the broad-band polarizing reflective panel 8', but is transmitted (i.e. leaked) therethrough due to a suboptimal extinction ratio, is absorbed by the broad-band absorptive linear polarizer 8A' through energy dissipation.

Similarly, the polarization state of broad-band absorptive linear polarizer 11A' is LP1 in order to match the LP1 polarization state of broad-band polarizing reflective panel 11'. Such polarization matching ensures that spectral energy which is not reflected from the broad-band linearly polarizing reflective panel 11', but is transmitted (i.e. leaked) therethrough due to a suboptimal extinction ratio, is absorbed by the broad-band absorptive linear polarizer 11A' through energy dissipation. The use of broad-band absorptive linear polarizers 8A' and 11A' substantially improves the contrast of images formed by the LCD panel, without reducing the light transmission efficiency along the light projection axis of the LCD panel which, as shown in FIG. 2, extends from the backlighting structure towards the eyes of the viewer. Such broad-band absorptive polarizers can be realized using dichroic polarizing material well known in the art. Preferably, these absorptive polarizing filter panels 8A' and 11A' are laminated directly onto broad-band linearly polarizing reflective panels 8' and 11', respectively, during the fabrication process of the LCD panel.

[0405] As shown in FIG. 37A, the LCD panel of the present invention is shown as part of a direct-view type color image display system 1 which is capable of supporting displaying high-resolution color images. During operation, the LCD panel 2 is actively driven by pixel driver circuitry 3 in response to color image data sets produced from a host system 4 which can be a computer-graphics board (subsystem), a video source (e.g. VCR), camera, or like system. The function of the LCD panel 2 is to spatially intensity modulate and spectrally filter on a subpixel basis the light emitted from an edge-illuminated backlighting structure 2A which may be realized in a variety of ways. The optically processed pattern of light forms color images at the surface of the LCD panel for direct viewing.

[0406] As shown in FIG. 37B, the LCD panel of the present invention 2' is shown as part of a projection-view type color image display system 1' which is capable of supporting displaying high-resolution color images. During operation, the LCD panel 2' is actively driven by pixel driver circuitry 3 in response to color image data sets produced from host system 4 which can be a computer-graphics board (subsystem), a video source (e.g. VCR), camera, or like system. The function of light source 5 is to produce and project a beam of light through the entire extent of the LCD panel. The function of the LCD panel is to spatially intensity modulate and spectrally filter the projected light on a subpixel basis. The optically processed pattern of light forms color images at the surface of the LCD panel which are then projected by projection optics 6 onto a remote display surface (e.g. screen or wall) for projection viewing.

[0407] The systems shown in FIGS. 37A and 37B are each designed to support monoscopic viewing of color images representative of 2-D and/or 3-D geometry. However, these image display systems can be readily adapted to support stereoscopic viewing of 3-D objects and scenery of either a real and/or synthetic nature. One way of providing such viewing capabilities is to mount (i.e. laminate) a micropolarization panel upon the display surface of the LCD panels 2 and 2' in order to display micropolarized spatially multiplexed images (SMIs) of 3-D objects and scenery, for viewing through electrically-passive polarizing eyeglasses,